A MULTICENTER TRANSPORTATION PLAN

*WILLIAM WEISMANTEL

INTRODUCTION

> Not by accident, then, have the old functions of the urban container been supplemented by new functions, exercised through what I shall call the functional grid: the framework of the invisible city....
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> Technologically, two of the most perfect examples of this new network are in our power and communication systems: particularly clear in the electric power grid. A centralized power system has very definite limits of expansion. Beyond a given point, not merely are losses in transmission excessive, but a breakdown in the central station or a local disruption of the transmission wires can cause great hardship at every point. The electric power grid, in contrast, is rather a network of power plants....
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> Each unit in this system has a certain degree of self-sufficiency and self direction, equal to ordinary occasions. But by being linked together, the power stations form a whole system whose parts, though relatively independent, can upon demand work as a whole, and make good what is lacking in any particular area. The demand may be made at any point in the system, and the system as a whole may be drawn on to respond to it. Though the whole is at the disposal of the part, it is the local user who determines when it shall be used and how much shall be taken....
>
> This pattern is not purely a technological one: it has a parallel in the realm of culture...[1]

This is an article about two possible transit systems for the St. Louis area. One of the systems resembles the "functional grid: the framework of the invisible city," described by Lewis Mumford as a replacement for the urban container, the old style city. The reader is invited to infer that the other transit system described herein resembles the urban container, the old style city. Of course one cannot count Mr. Mumford as backing this or that transit system or this or that city style. Mr. Mumford merely demonstrates that the entire history of cities is not too much for the lone man to assimilate and understand. This is encouraging to the writer or his reader who would understand transportation within a multimillion-personed metropolitan area.

The Article contrasts a multicenter plan with the plan of the *St. Louis Metropolitan Area Transportation Study* (1959), known as the Gilman Plan after its authors, W. C. Gilman & Co., New York consulting engineers. The Gilman Plan was initiated by the Mayor of St.

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1. Mumford, The City in History, 564-65.

Louis and Supervisor of St. Louis County with the assistance of public funds and a Citizens Metropolitan Transit Committee. At the same time the U. S. Department of Commerce Bureau of Public Roads and the Missouri State Highway Commission engaged Wilbur Smith and Associates in a *Highway Planning Study for the St. Louis Metropolitan area* (1959). They reported 1957, 1970 and 1980 travel patterns in great detail. The number and type of trips to and from hundreds of small zones were counted or projected. The Wilbur Smith Study and the Gilman Plan were prepared jointly and each depends on the other.[2]

They represent a three-year effort and about a half million dollar professional fee. Specific transportation plans and projections were made only for the Missouri side of the metropolitan area. But in December 1960 the W. C. Gilman Company reported to the Missouri-Illinois Bi-State Agency that its transit system proposed for the city of St. Louis and adjacent Missouri counties could be extended throughout the Illinois side of the metropolitan area.[3] The 1960 report did not make detailed proposals for the Illinois portion of the system. However, it did recommend that one public agency acquire the fifteen private companies now serving the metropolitan area and suggested the Bi-State Agency as the logical vehicle.

The Gilman Plan is a big center plan, focusing travel routes and concentrating jobs and homes as near as tolerable to downtown St. Louis. The multicenter plan proposed herein is a network of transit and travel routes in all directions. The transit traveler could move from the center nearest him or to any place in the metropolitan area. These are two very different transportation systems; their contrasting effect on how close people will live together, where their jobs will be

2. Earlier St. Louis area transit plans include an 1883 proposal for elevated lines by T. E. Broun, Jr., a civil engineer; a 1910 proposal by E. G. Lewis, founder of University City, that a subway be built from downtown St. Louis to University City; a 1916 report by F. W. Doolittle, a consulting engineer to the United Railways Company for a rapid transit line out to the city limits, and three reports in 1920. One of these was a plan for suburban service by Charles S. Butts of the St. Louis Department of Public Utilities. Another was by C. E. Smith, consulting engineer to the Department of Public Utilities. See also the *City Plan Commission, The St. Louis Transit System, Present and Future* (1920), (proposing a coordinated streetcar system including a subway loop downtown. Four rapid transit lines were drawn but declared for future development, perhaps "in ten or twenty-five years" or 1930 or 1945). See *Board of Public Service, Report on Rapid Transit for St. Louis* (1926) (proposing 15.5 miles of rapid transit lines, using fast streetcars with few stops and no competing surface traffic, and 7.5 miles of downtown subway).

3. Gilman & Company, *Supplement to St. Louis Metropolitan Area Transportation Study* 1957-'70-'80 Re: *An Interstate Unified Transit System* (1960).

and the entire arrangement of the St. Louis area will be seen in subsequent paragraphs.

The *scene* of this discussion is the St. Louis metropolitan area—about two million people in 1960. It is composed of two counties and part of a third in Illinois. In Missouri it is the venerable city of St. Louis and four counties around it. See plate 1, a map of the St. Louis area.

Elements of the discussion are: *public transportation,* both vehicles used (cars, buses, trains, etc.) and the travel lanes (expressways, major streets, subways) and *metropolitan form* or community arrangement. This is the ever-forming configuration of homes, places of work, institutional places. The proposals in *time* call for an immediate program and improvements needed before 1980.

Why should the lone writer challenge such a Goliath of a study as the Gilman Plan with an alternate transit plan? What mischief has Mr. Mumford, with his monumental assimilation of the history of cities unleashed? The author of this article in fact favors the Multicenter Plan on its merits as a superior transit system and better metropolitan form than Gilman's one center plan. But the issue of which plan is better cannot be entirely resolved here. It cannot be settled here on its merits because the Gilman Plan is an exhaustive study, and the Multicenter Plan is yet an undocumented idea. This article has little importance as a comparison of two transit plans. It *shows how* they could be compared and urges the value of such comparison as sound decision-making and essential due process. This article reaches for dignity and importance as a lesson in thought process for the gathering mind of Metropolitan St. Louis. It does not describe those in the metropolitan area who have power to decide, or where their forum is. It is a gift to them of the true power of choice.

The issue, "shall we accept or not accept the Gilman Plan?" is a mean question, regardless of the quality of that plan or the wisdom of its judges. This article would give their game new meaning: "Shall we accept a one-center plan or call for a multi-center plan, or perhaps call for some unnamed third?"

In common law adversary procedure, *A* seeks to recover from *B* and each is heard in court. In writing conventional legislation, the legislative committee has a hearing, with abundant expert and lay testimony describing the problem and offering solutions. Due process for choosing a metropolitan transportation plan is not satisfied by court room procedure or legislative procedure. After how many pages of transcript could a committee of metropolitan representatives end its hearings, retire to its chambers and write a transportation plan? Has a comprehensive transportation and community organization

plan really been heard when only one plan is brought to the hearing or the committee meeting?

I. Present Facts About the Metropolitan Area

Of the 2,110,000 people in the St. Louis metropolitan area in 1960, 490,000 or 23% reside on the Illinois side. There are about 900,000 employees in the entire metropolitan area. 114,000 of these work in downtown St. Louis, 395,000 others are employed in the remainder of St. Louis. With 750,000 people, the City of St. Louis has 36% of the area's population but 57% of the jobs.[4] In recent years, as the metropolitan area grows the City of St. Louis decreases percentage-wise both in population and employment, especially in population.

Disparity between employment and population is not so pronounced east of the City of St. Louis, the mother city, as it is to the west of the City of St. Louis where the cars and the ranch houses roam. In 1957 the Illinois counties to the east had 30% of the area's population and 19% of its jobs. St. Louis County, which as every native knows is west of and separate politically from the mother city of St. Louis, has 29% of the area's population but lags behind in employment, with only 17% of the area's workers. It will be seen that the Gilman Plan accepts the dormitory nature of suburban areas, in the 1960 manner of St. Louis County. The Multicenter Plan by contrast encourages distributing employment in centers scattered as widely as residences.

II. The Shape of the Metropolitan Area

Two, perhaps, three trends can be seen in the *form* of the St. Louis area at present. The City of St. Louis and most of St. Louis County form a compact mass—suggesting one large city. At the same time there are independent communities separated from the main body, yet much more related to it than are hinterland communities 50 to 100 miles away. The third trend is a thin scatteration all over the countryside, not of communities but of individual homes or small subdivisions. The large, one-city mass pushes firmly against the Mississippi River to the east. In Illinois the pattern is clearly one of separate communities, with farms and forests in between. The western limit of the large, one-city mass is vague and broken, but beyond it one again enters the field of satellites. Plate 2 entitled *Present Metropolitan Form* shows this 1960 pattern. Land used for residences is shown in gray, employment concentration is registered in black and 1962 freeways completed are also shown superimposed in black. The one

4. Marketers Research Services, Inc., Report on Population - Land Use - Employment - St. Louis Metropolitan Area (1959); *U.S. Census* (1960).

city central mass, which is expanding, and the separate communities are apparent as competing tendencies.

Although the average St. Louis family is very similar in income and education to the average family occupying new suburban housing, their ways of life contrast sharply. The dwelling of the St. Louis family occupies 1/15 of an acre; the St. Louis County family, ⅓ acre.

Can the compact, one-city mass be distinguished from the separate satellites by age? Are the satellites the product of the 1950s, the large mass of earlier days? No. Both trends were evident in the 1950s—the large mass expanded outward, the satellites grew also. Historically there have always been outlying cities near St. Louis; St. Charles, Florissant, Manchester and Carondelet, Missouri and Belleville, Illinois are early settlements away from the main city.

Only the hungry use of land clearly distinguishes new housing from old. The ⅓ acre per family is typical of new homes, the 1/15 acre per family a historic pattern. The new trend has a strong rate; ¼ of the housing in the metropolitan area is less than 10 years old. In St. Louis County 43% of the housing is less than 10 years old.

Present trends dictate nothing conclusive about future shape of the metropolitan area: will it be compact or in separated parts? Recent housing trends do foretell a great spreading out, more lawn than roof, whatever the metropolitan form.

III. Future Population and Metropolitan Form

The Gilman Plan lays down a transit and road system for a metropolitan area expected to grow from 2,110,000 (1960) to 3,120,000 (1980)[5] with 1957 employment of 854,000 reaching 1,180,000 by 1980.[6] To simplify comparison, these estimates are accepted in the description of the Multicenter Plan.[7] But the arrangement by daytime and nightime location of these 3 million people and 1 million workers, that is, the future metropolitan form depends on what kind of transit and freeway system is built. The two plans would probably have opposite effects on metropolitan form. Gilman freeways converge on downtown St. Louis causing a compact form, with most new growth attracted to the edge of the large, one-city mass or happening as reconstruction within the large mass. By contrast, Multicenter freeways would form a giant framework on which a system of separate communities would cling. It was noted that present trends or historic examples could be found for either of these arrangements. Plate 3

5. Gilman & Co., *op. cit. supra* note 2, at 5.

6. Marketers Research Services, Inc., *op. cit. supra* note 3 at 12.

7. In fact the author prefers the 1980 St. Louis area projections of 3,629,000 found in *A General Land Use Plan, St. Louis County, Missouri* Table 1 (1960) to the 3,120,000 level expected by the Gilman firm.

has *Plans in Historic Perspective.* One sketch shows a 1900 compact city with small outlying cities. By 1960 two freeways going to the center encourage compact growth, but outlying communities continue to grow and others begin life. There are two sketches of 1980 form, one showing a compact city knotted around freeways that gather traffic to the center of St. Louis (the Gilman Plan), the other suggesting an open framework with a community sitting at each intersection (the Multicenter Plan).

IV. Present Transportation

The Wilbur Smith study of 1957 travel[8] showed that 1,417,000 people in St. Louis and St. Louis County made 3,172,000 trips each day. This is more than two trips per person each day, although drivers—including bus drivers—alone accounted for 57% of all the trips. 2,360,000 or 75% of all trips were made by private automobile. Taxis accounted for 70,000 trips, school buses 63,000 and service cars 25,000. Traffic congestion was shown to be caused especially by those making long trips. One person driving 30 miles through the metropolitan area adds as much traffic as 30 persons each traveling one mile. In fact only 27% of the trips took 15 minutes or longer, but this 27% accounted for 60% of all traffic.

V. Transit

363,000 transit trips were made on the typical day.[9] This is only 11% of all trips. But of all trips to downtown St. Louis 46% arrived by transit. In fact 38% of all transit trips made in St. Louis and St. Louis County went to and from downtown St. Louis. When the area west of downtown St. Louis is included, known as the Lindell Corridor in Gilman parlance, about 51% of all transit trips have been accounted for. No detailed study has been made of travel on the Illinois side, but transit appears to be even less popular there than on the Missouri side. Illinois area residents spent only $7.78 per capita on transit in 1959 while Missouri residents spent $14.10 each. Only 37.5% of the trips between the Illinois area and downtown St. Louis were by transit compared to 46.5% use of transit between the Missouri area and downtown St. Louis.

Transit is therefore a small part of the transportation activities of the St. Louis area, the 1957 study shows, and what there is of it is dedicated to the service of downtown St. Louis and the Lindell Corridor. Does the future economic life of the St. Louis area depend on adding more offices, stores and factories to these central areas? The

8. Smith & Associates, *A Highway Planning Study for the St. Louis Metropolitan Area 109* (1959).
9. *Ibid.*

Gilman Plan assumes it does, and logically designs a transit system to pour more people and new life into these areas.

Plate 4 shows *Present Transit Routes* in the St. Louis area: express routes are shown heavier than local routes and transit routes are superimposed on a gray base of present metropolitan form.

It is evident from Plate 4 that transit service thins out abruptly when it reaches those areas built since World War II, where most homes are detached and separated from one another by lawns and open space. Lines in these areas are the diffused ends of a system leading to the central city. They resemble the feeble, dispersed rays of a distant light. There is the beginning of a second pattern: local transit lines focusing on the more established suburban business centers. This pattern is observable in the north part of the map, the Ferguson center, to the west, the Clayton center, and to the southwest Kirkwood. But many of the outlying residential areas or commercial centers, although connected by transit to the central city, are not to one another, and significant suburban areas have no public transit at all.

In the prewar pattern of city growth new buildings added to the edge of the central mass were close together, and both radial (downtown) and crosstown transit lines could be extended to serve them. Commuter trains or buses reached to the outlying communities, but postwar outying communities spring up at the rate of weeds rather than orchards some at considerable distance from downtown St. Louis. Spacing between new buildings being erected in these outlying communities or at the edge of the central mass is too generous for good service by the old style transit system.

Most of the one million new residents who will join the metropolitan area in the next two decades will dwell in the new fashion, in widely separated buildings. Can a public transit system be designed to serve their specific needs and way of life? The Multicenter Plan may be the answer.

Both the Gilman Plan and the Multicenter Plan require a unified system under public operation or control. Both rely on rubber tired, self-propelled vehicles (buses) for rapid transit, but the two systems stop hand-holding at this point, and are known more by differences than by similarities.

Features of the Multicenter Plan are explained below, followed by equal time for the Gilman Plan. Final paragraphs of this article compare the advantages of each system.

VI. The Multicenter Plan

Our transit traveler leaves home in a taxi, service car or local bus for a nearby transportation terminal. If an apartment dweller, he

probably lives within walking distance of the terminal. If he resides between two terminals, he will choose the one in his direction of travel. Most likely of all, he will drive to the terminal and park there or be dropped off there by a member of his household. In the earlier years of the Multicenter system, terminals will be improvised: an extra large bus stop at a shopping center, with a cab stand nearby, or a "loop" left from streetcar days.

Outlying terminals will begin modestly. A mature terminal is shown by Plate 5. From the very beginning of the opening of a terminal it must give good service; rapid transit vehicles must arrive and depart frequently and regularly. This does not mean half empty vehicles but smaller vehicles, perhaps automobiles or micro buses. The traveler's microbus will not stop between terminals. The traveler may change buses at a terminal in order to change direction or he may be asked to leave his small bus and enter a larger vehicle. These changes can be made conveniently and quickly, since a terminal has simple functions. It is a four way stop and intersection for two rapid transit bus lines.

Weekly and daily passes will be used exclusively, to free the traveler from fumbling for change and paper transfers, and to subsidize the longer transit trips.

About forty terminals would serve the metropolitan area if the multicenter transit system began operating today. Another might be added every two years.

Plate 6 shows the 1980 metropolitan area served by *Transit Routes —Multicenter Plan.* Transit travel between centers is marked by heavy lines, local bus routes are marked lightly.

Non-stop vehicles would use freeways or major streets, whichever is most direct. No special pavement for the exclusive use of transit vehicles would be erected, but transit vehicles could be given a speed advantage over private vehicles where necessary. This could be done by limiting certain streets to transit bus use during peak hour, monitoring private vehicles entering freeways to allow transit buses to move freely and by other traffic control devices.

Is there an air show at Lambert Field? A sunrise service at Babler Park, in western St. Louis County? A game at the stadium downtown? A fast track at Collinsville, Illinois? Using such a multicenter transit system crowds could converge on any of these points. It resembles the network of power plants described by Mumford in the prologue to this article. None of these places have approach roads wide enough or parking areas broad enough to converge an automobile-borne crowd as conveniently as transit riders. For day to day use the multicenter transit system would give old people and teenagers the mobility to go in all directions now enjoyed only by the motorist.

To the one car family the system would be equivalent to the second car. To the motorist faced with a long trip in any direction within the metropolitan area, the Multicenter transit system would "leave the driving to us."

VII. A Multicenter Freeway System

Freeways would form a giant gridshaped framework if built to carry out the Multicenter idea. These limited access roads would form square cells averaging ten miles on a side. Those suggested for construction in the next eighteen years are shown in Plate 7. Freeways now completed or under construction are of course made part of the system. These are radial roads, built in swaths cut through the city, converging on downtown St. Louis. Future freeways would divert this pattern to fashion a gridiron or cell pattern throughout the metropolitan area. New subdivisions, shopping centers and places of work would form where freeways and major streets afford good access. They would also form around present outlying centers and at transit terminals. Such a community organization is shown in gray beneath the Freeway System of Plate 7.

A giant gridiron of freeways has great capacity for growth. Freeways converging on one center cause central congestion and long trips. This is an irritation when an area reaches two million persons, and at three million the situation is worse. Trips lengthen and central congestion increases even more when population tops five million, and so on. By contrast, a gridiron freeway system can be extended indefinitely. It could remain the basic plan when the area had reached twenty-five or fifty million persons.

Permanent belts or corridors of open space perhaps twenty miles wide should interlace the area when it reaches three million, however. Otherwise a changeless, continuous city of unbearable breadth would result, causing psychological and aesthetic injury to residents. Narrower belts of open space perhaps two miles wide intertwining the metropolitan area could be guaranteed easily under the gridiron freeway plan. By contrast, encircling an expanding one-mass city with a green belt is as difficult as stopping a landslide.

Traffic behaves better on a grid freeway system where employment and other traffic generators are distributed among centers than on a pinwheel freeway system, where traffic moves into and out of the center. A gridiron system distributes traffic more evenly by direction —it does not use only one side of the street in the morning rush and the other side in the afternoon rush.[10] It uses both sides evenly,

10. "A radial pattern of expressways has certain limitations in that it tends to force traffic to use the downtown loop. A gridiron pattern of expressways, on the

morning and afternoon. Trips are shorter resulting in less automobile traffic and more human happiness, where traffic generators are distributed. The Multicenter Plan would especially remove heavy automobile traffic from city of St. Louis streets by eliminating many of the long home-to-office trips otherwise destined there, and reducing in new construction there, the number of dwellings, and therefore automobiles per acre.

A gridiron freeway system would be built primarily through the open countryside. This opens thousands of acres of vacant land for new construction. Regrettably, most St. Louis area freeways built so far ploughed through the built-up city. Only one end of each introduced open land for new private construction. Thus freeways built in the 1950s to 'save downtown' probably did so at the expense of the healthy growth of other parts of the St. Louis area economy. The lineup of new industrial plants along freeways built on vacant land *around* and not *into* other major cities is grave testimony that St. Louis is making such a mistake. Boston,[11] Louisville, Dallas and Chicago can all point to miles of new industry and commercial centers built on vacant land adjacent to multicenter rather than Gilman concept freeways.

VIII. The Gilman Plan[12]

The Gilman Plan would coordinate the surface transit routes that were shown on plate 4 into one system. It would connect certain outlying lines that now go near one another; it would add three or four north-south lines in the central west suburban area. The limits of the coordinated system can be seen in plate 8.

Only one third of Missouri side transit trips would use the surface system. (Recall the Gilman Plan does not design a transit system for the Illinois half of the metropolitan area.) Two-thirds of all transit trips made on the Missouri side would be on the rapid transit routes. These rapid routes are shown by heavy lines on plate 8. Eight move passengers towards downtown St. Louis. One is a crosstown route, located about four miles west of downtown St. Louis, near Kingshighway Boulevard.

Surface routes would collect passengers for the rapid transit lines.

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other hand, distributes traffic more evenly throughout the system. Consequently, some of the more recent expressway systems have more or less a gridiron appearance." A drawing of the Cleveland-Cuyahogo expressway system accompanies these words. Woods, Highway Engineering Handbook 4-32 (1960).

11. For a map showing new factories built along Route 128 circling the Boston area see Woods, Highway Engineering Handbook, 4-7 (1960).

For a general discussion of transit vs. private automobile see Owen, *The Metropolitan Transportation Problem* (1956).

12. Gilman & Company, St. Louis Metropolitan Area Transportation Study 1957-'70-'80 (1959).

Park-ride would also be used, with lots located along the rapid transit routes. Because the Gilman Plan concentrates destinations in the center of the city, the transit rider will not have to transfer as much as under a multicenter transit system. Service cars and some types of taxis competitive to transit should be prohibited, the Gilman report recommends, for the good of the area's overall transportation needs.

Four of the eight rapid transit routes centering on downtown St. Louis would be carried by freeways, just as express buses now use the two completed freeways. Four other roadways would be erected for the exclusive use of rapid transit buses. These would be built above alleys, elevated to cross over city streets. They would carry buses above street traffic and stoplights to a "flight deck" or loop above the street in downtown St. Louis. This loop would enclose thirty downtown blocks, from 6th street west to 12th street, and from Chestnut Street north to Lucas Avenue. Cost of the special roadways for buses, including the elevated loop downtown, is estimated by the Gilman study at one hundred seventy-five million dollars. Plate 9 entitled *Improvements Required by the Gilman Plan* shows details of the special roadways and loop. The Gilman Study also proposes fifty million dollars in parking garages downtown for private automobile storage. It offers the possibility that these garages could pay for themselves.

Transit use in the area covered by the Gilman proposals (the City of St. Louis and most populated part of St. Louis County) would actually decrease in importance between 1957 and 1980 under the Gilman Plan. Transit was 11% of all trips within that area in 1957. By 1980 it would drop to 10.3% of all trips, Gilman estimates. The plan anticipates that actual number of transit trips would increase between 1957 and 1980 from 363 to 384 thousand daily, a 6% absolute rise. But this is a relative decline, considering that total trips and population would increase over 50% in that area from 1957 to 1980.

The freeways proposed for automobile, truck and bus use, together with the roadways to be built for rapid transit use are shown in plate 10. Counting both sides of the river and both types of structure, this plan brings one dozen expressways to the aid of downtown St. Louis. It would build belt routes circling *around* downtown St. Louis in one location on the Illinois side and five locations in concentric rings on the Missouri side. Two of these belt routes would cut through older parts of the City of St. Louis. (One at 18th Street, another west of Vandeventer Boulevard, about three miles west of downtown St. Louis.) A tight, one-mass metropolitan form would result from such a freeway and transit system, especially on the Missouri side. Where homes for three million people would be distributed by 1980, under the Gilman transportation system, is shown in gray on plate 10. Each black dot seen on that drawing is 1,000 employees at work, according

to the Gilman distribution. The Gilman image is a single city of simple form, with stores, factories and offices in the center, surrounded by apartments (these are dwellings for the transit riders), with detached dwellings on the outside ring. (These people generally drive to work.)

IX. Comparison of the Two Systems

The freeway locations, residential arrangement and job distribution of the Gilman Plan shown in plate 10 can be contrasted with plate 7, which displays the same effort to build roads, homes, commercial and industrial buildings according to a Multicenter concept. Compare also the Gilman transit routes, plate 8, with the Multicenter routes, plate 7. The probable effect on population and employment distribution under the two plans is shown in the two tables that follow. These are only predictions of what the two plans would do to the shape of the St. Louis area. Such predicting, assuming this or that transit and road system, is not an exact science. Nor should such predictions be exchanged mentally for the proposals themselves, which are after all rather specific plans for public improvement in transportation routes and service. No one can be sure of the effect of any public improvement. The Gilman Plan might actually scatter rather than compress the metropolitan form. Residential buyers and industrial builders might be more attracted by the open countryside than a tight urban road system. The central business district might grow boundlessly under a Multicenter plan if a luxury, small-bus style of transit proves popular, despite the prediction in the table that a Multicenter Plan would diffuse central employment to new centers.

Table 1
Estimated Effect on Population Distribution
MULTICENTER VS GILMAN PLAN
St. Louis Metropolitan Area

	1960	*1980*	
		Multicenter	*Gilman*
POPULATION (Thousands)			
CITY OF ST. LOUIS	750	600	866
ST. LOUIS COUNTY	703	1300	955
ST. CHARLES COUNTY	53	125	56
JEFFERSON COUNTY	66	125	96
FRANKLIN COUNTY	45	100	44
MISSOURI TOTAL	1617	2250	2017
ST. CLAIR COUNTY	263	427	555
MADISON COUNTY	225	428	533
MONROE (PART)	5	15	15
ILLINOIS TOTAL	493	870	1103
MO.—ILL. TOTAL	2110	3120	3120

Table 2
Estimated Effect on Employment Distribution
MULTICENTER VS. GILMAN PLAN
St. Louis Metropolitan Area

	1957	*1980*	
		Multicenter	*Gilman*
EMPLOYMENT (Thousands)			
CITY OF ST. LOUIS	509	400	580
ST. LOUIS COUNTY	146	438	278
ST. CHARLES COUNTY	10	39	12
JEFFERSON COUNTY	17	39	20
FRANKLIN	15	31	12
MISSOURI TOTAL	697	947	902
ST. CLAIR COUNTY	72	137	170
MADISON COUNTY	88	137	112
MONROE (Part)	1	5	5
ILLINOIS TOTAL	858	1189	1189
ST. LOUIS CENTRAL BUSINESS DISTRICT	114	159	94

The Gilman Plan would rebuild the population of the City of St. Louis to its 1950 level. The Multicenter Plan, by diverting residential construction to new areas, would relieve the population pressure in the City of St. Louis. The Gilman Plan would add about a quarter million more people to the Illinois Counties by 1980 than the Multicenter Plan. The Gilman Plan considers the building boom on the western side of the metropolitan area unbalanced because it leaves the center of the area—downtown St. Louis—stranded and off-center. Gilman transportation proposals would cause new construction to scramble as near as possible to downtown St. Louis. This would cause a surge of residential development on the Illinois side, opposite downtown St. Louis.

The number of people who work in the City of St. Louis would *increase* under the Gilman Plan from 509 thousand (1957) to 580 thousand (1980). The Multicenter Plan would continue the march of residential construction into St. Louis County, and would join with it a boom in employment center construction, raising St. Louis County employment from 146 thousand (1957) to 438 thousand (1980). Thus the Multicenter Plan makes the suburbs more like the city and permits the city to become more like the suburbs.

The Gilman Plan estimates of future residential and employment distribution were made by Dr. Ernest Jurkat of Marketers Research Services, Inc.[13] Dr. Jurkat studied how residential and employment

13. Marketer's Research Service, Inc. *Supra*, Note 3.

uses of land clung in the past to central locations with a strength dependent on the ability of each to pay rent. This past "gravity" behavior pattern enabled him to estimate future behavior, and finally future distribution of homes and jobs. This method could not design a transportation system, or locate a single freeway or bus line. It can only distribute population and employment throughout an assumed transportation system that was arrived at by some other means.[14]

How the transportation system itself was chosen by the Gilman engineers is neither mysterious nor scientific. Various future road and freeway plans both in Missouri and Illinois had been announced long before the Gilman and Wilbur Smith engineers arrived in 1957. The two State Highway Departments and the governments of the City of St. Louis and St. Louis County had street plans. The City and County had passed bond issues for street improvements in 1955. The consultants accepted this basic future road framework, studying the Missouri portion in detail and suggesting some modifications. They had a clear field regarding transit proposals, but the planned highway network converging on downtown was a strong reason for proposing a transit system that did the same thing. Buses were favored from the beginning because they could ride on the proposed freeways.

The "gravity" distribution method might have been used to estimate where homes and jobs would locate under a Multicenter Plan. In fact the multicenter distribution and the Multicenter Plan itself were prepared by a less rigorous but perhaps more sensitive method: by positively designing a metropolitan area that accomplished a number of objectives. Some of these are the opening of new growth areas, distributing employment near residences, pursuing a form that is open-ended to accommodate unlimited future expansion, a form that makes continuous, permanent open space easy to acquire. This was done by the intuitive skill of an experienced city planner who has a detailed knowledge of the metropolitan area. 1980 population levels estimated for the Multicenter Plan were confirmed by a simple extrapolation of present and past trends in parts of the metropolitan area, such as the Illinois counties, the Missouri counties or within a particular county.

Multicenter population projections were also tested in a brief affair with the center of gravity, that siren who won the heart of the Gilman Plan. But the Multicenter investigations showed that the true center of gravity has not been sunning herself on the west bank of the Mississippi River since 1764 as believed by her suitor Dr. Jurkat, but

14. For the theories on the relation of Metropolitan Land Use Planning to Transit and Highway Planning see Mitchell, *Metropolitan Planning for Land Use and Transportation 10* (1959). Also Jurkat, *Land Use Analysis and Forecasting in Traffic Planning*, XI TRAFFIC QUARTERLY (April 1957).

has been tiptoeing west. Her progress was plotted in plate 11, entitled *Gravity Population Distribution.* Illinois side population from 1910 to 1980 is plotted on the right hand side of that drawing.

The Missouri area population is on the left. They are separated by a vertical pole which is downtown St. Louis and the fixed center of gravity. The dotted line that drifts west is the moving center of gravity, always half way between east side and west side population limits. The moving center is six hundred thousand people west of downtown St. Louis in 1960. This places it in Forest Park, which is five miles west of the Father of Waters. Is it a coincidence that Forest Park is the current host of the moving center of gravity and is also the scene of so much highway widening and monumental construction that it will soon be neither a forest nor a park? A park or a stadium is a "low intensity" activity not as productive per square foot as an office building, and not as likely candidates as office buildings for construction at the center of gravity. But a stadium has recently been razed at the southeast corner of Forest Park, near the moving center of gravity, to make way for new office buildings. In downtown St. Louis, the fixed center of gravity, office buildings are torn down to make way for a park, a parkway and a stadium. If one must choose a center of gravity, the moving center of gravity discovered in Multicenter research has better credentials than the fixed center of gravity used by Gilman.

The moving center of gravity left a trail of high buildings that can be seen very distinctly from the air. There are high buildings at Grand Avenue, two miles west of the historic center. Another very active high point is at Kingshighway Boulevard, four miles west. Eight miles west is the Clayton office center, where a new high rise building is erected almost every month.

The Multicenter Plan found Illinois side and Missouri side 1980 population by extending the moving center of gravity in a straight line, according to the path it has traced since 1910. By 1980 it would be 750 thousand persons west of the Mississippi. Borrowing the Gilman dogma that population will encircle the center of gravity, one half the 1980 population was placed east of the moving center of gravity and one half west of it. This results in an Illinois area population of 870,000 by 1980 with a Missouri area population of 2,250,000. These quantities were checked by asking two questions: are they reasonable projections of the growth of each area? Is it reasonable to add those quantities to the two sides, considering their topography, available employment, the capacity of school districts to build additional classrooms, etc?

The *Gravity Population Distribution* (plate 11) also plots the Gilman projections for the Missouri area and Illinois area. The Gilman

growth for the Illinois area between 1960 and 1980 shows a surprising acceleration, in view of the 1910 to 1960 history, and their projection for the Missouri area shows a surprising slowdown in its growth rate. Although the Gilman Plan does not recognize the moving center of gravity concept, one can predict the route of the moving center if Gilman's Plan is accomplished. The moving center under the Gilman Plan would lurch eastward rather violently after 1960. It would have turned around in Forest Park, and been escorted back to a point somewhere between Grand Avenue and Kingshighway Boulevards by 1980.

The influence of transportation on metropolitan form cannot be questioned. Perhaps the Gilman Plan could change the Illinois area and Missouri area population trends as much as are shown by plate 11. If so, then it must in this matter be considered more radical than the Multicenter Plan—radical in the sense that it pays less attention to trends, and manipulates more violently the metropolitan form than does the Multicenter Plan.

The effect of the two estimated population levels of St. Louis County is shown by plate 12. It grew 430 thousand from 1940 to 1960. If it equals this rate in the two decades following 1960, it will have reached 1,133,000 by 1980. The Gilman Plan adds only 252 thousand to St. Louis County from 1960 to 1980. The Multicenter Plan, by reasoning that the entire area grew 600 thousand from 1940 to 1960 but will grow over one million from 1960 to 1980, adds an estimated 600 thousand persons to St. Louis County in these decades. Again the Multicenter estimate takes the side of the likely, the probably, and the Gilman Plan tests one's faith in man's ability to alter the way things are going.

The Gilman Plan lays great emphasis on the attraction of the center of gravity (downtown St. Louis) for all kinds of urban uses, but there is another force visible in contemporary growth: it is the attraction of the open countryside. When the countryside is really open, a contrast to urban life, it is a positive value for a city person to live near the open countryside. Looking at this value alone, the Multicenter Plan will probably produce a more satisfying urban form. 28% of all St. Louis area families now live within a mile of the open countryside. This number would remain the same under the 1980 form predicted for the Multicenter Plan. It would decrease to 17% if the Gilman idea is pursued. Plate 13, *Distance from the Open Countryside,* shows how far families lived from the open countryside during past decades, and compares the effect of Gilman versus Multicenter form on this value in the future.

A final appreciation of how metropolitan form would differ under the two systems is shown by *Profiles* of plate 14. The Gilman city

profile is a high lump on the horizon. The Multicenter city is a rhythm of smaller center, then open countryside, then smaller center.

The appeal and, perhaps, therefore, the propriety of the Gilman Plan to a conservative community like greater St. Louis cannot be denied. Since transit is slipping in popularity, there is soundness in a plan that estimates a farther slip, relative to other modes of travel. Since most transit trips now begin or end near the center and inner ring of the city, it is a safe plan that does not contemplate change in this pattern. Motorists are most crowded in their trips to the center of the metropolitan area, this being their most frequent destination. Therefore, why not come to the aid of those citizens with wider streets and new freeways parallel to these converging streets? Furthermore, downtown St. Louis is a tried and true place to do business. Diffuse future offices and retail places are too far from this historic center, and who knows what risk is run. In fact many suburbanites do not want the clatter of offices, stores, factories, apartments, small homes or lower class people out where they live. They are pleased with a plan that places stores, offices and apartments in the middle, and quiet family housing at the distant edge.

The idea of the center of gravity around which a great city spins has strong support, and one can see much evidence that the invisible center is real as one travels through the city. Land in the middle is more expensive. That is why downtown buildings crowd the sky and why the streets downtown are damp and sunless. The next ring contains very old housing that has been cut up into small apartments and rooming houses. Since this land is so near the valuable center, such cutting up is excusable. It explains also why public housing built in this second ring is so brutally crowded; it has a prime location. The next ring has middle-aged dwellings on small lots. The occupants of these homes are given both a housing market and a transportation system that they can afford. At the outer ring, far from the most valuable location, are families who can afford much land, new housing and private transportation.

Such a community arrangement was neither the discovery nor the invention of the Gilman engineers or their consultants. It is public policy, expressed through the zoning ordinances of St. Louis and St. Louis County. The City allows its highest buildings downtown and in a ring of industrial land around the central district. Then one finds a ring of multiple dwelling zoning where seventy dwellings to the acre are allowed. This is public housing density. The next ring allows forty dwellings to the acre, the next twenty and the next ten. Beginning at the city limits, St. Louis County carries the scheme outward by grading housing from seven to the acre adjacent to the City of St. Louis to one dwelling to the acre at the outer edge of St. Louis County.

Can it be possible that the Gilman Plan is in error, when it locates freeways to relieve the traffic jams we now have, when it encourages high building construction in the middle of the area, where they are now, when it brings good transit service out only as far as the second-hand housing whose occupants most need public transit, and when it reinforces a land use pattern that is expressed in the zoning ordinances of both the City and County? It is in error. Such a city is sick.

Catherine Bauer, writing in *Goals for Americans* (1960) urges that suburbs be made more like the central city, and the central city more like the suburbs. This is a more democratic arrangement. The poor person or the black person should have the right to live in new housing or old housing, in the middle or the rural edge of the city. The wealthy person should have the same right to live in the old city or on a farm. The desire to return to one's childhood neighborhood in old age is strong and to be respected. Are these older areas to be furrowed by twelve radial freeways and two belt routes?

The 18th Street expressway will injure pre-civil war neighborhoods both north and south of downtown St. Louis. The belt route west of Vandeventer Boulevard will tear through Victorian housing and through spontaneous Victorian cabarets, the Gaslight area, as fascinating and inexplicable as Montmarte or Greenwich Village. If the Gilman Plan is successful, many old buildings left standing *near* the freeways will also be torn down because the freeways make their sites so valuable. Many of the old parts of St. Louis are of more than sentimental value to a few old people. They are part of a young nation's heritage. Upstart cities like Dallas, Detroit and Kansas City would welcome the historic buildings being torn down in St. Louis.

It is not suggested that St. Louis become a changeless museum. Rather, an old building or old neighborhood should be retained or razed on its own merits. Freeways and transit should render rural open sites central, accessible and valuable (this is the Multicenter idea) rather than focus metropolitan pressures onto quiet old structures. A metropolitan area should avoid a transportation plan that forces the dilemma of historic preservation versus economic stagnation. This is the Gilman Plan.

The Gilman Plan misses a great opportunity for service by designing a transit system whose major function will be to carry those who live in second-class neighborhoods downtown. The Gilman Plans assigns 48% of all downtown trips to rapid transit, but only 5% of the non-CBD trips. But non-CBD trips are 90% of all trips. It is these non-CBD trips the Multicenter Plan is best fitted to capture, by directing rapid transit lines in all directions, just as automobile trips go in all directions.

It can be demonstrated that the Gilman Plan incorrectly discounted

high and middle income families as potential transit users. The Wilbur Smith study found that in 1957 as family income rises, auto ownership rises from one car in ten persons to one car in just over two persons. Transit use was reported to *decrease* as income increases. 43% of all trips made by very low income families were transit trips, but only 5% of trips made by high income families, those earning $6000 each year, were transit trips, says the Wilbur Smith report.

Economists advising the Gilman engineers distributed future families on the basis of income: those farthest from the center of the city in 1980 will have incomes averaging over $8000 each year, using 1957 dollars. Those living close to the center of the metropolitan area will have incomes of less than $5000 each year. In the face of this advice: that transit use drops as income rises, and that future residential distribution will find income increasing with distance from the center of the metropolitan area, what kind of transit system is feasible? The Gilman engineers could hardly propose anything but a system that concentrates service in the center of the city, where the low income, heavy transit use families are to be located. In the face of such evidence, what hope is there for a Multicenter transit concept, which offers transit service to families of all incomes, everywhere in the metropolitan area? There are four propositions on which the Multicenter transit idea depends:

1. Transit use does not automatically decrease when income rises. It appears to decrease, because 1957 high income families tended to live beyond the area of good transit service. Using a small sample, home interview statistics gathered by Wilbur Smith and Associates were compared for high income families in St. Louis living near good transit, against low income families living where transit service is bad. These high income families made twice as much use of transit as the remote low income families! Therefore Wilbur Smith's discovery that transit use drops off as family income rises is an erroneous standard on which to base a future system. A sample of their own statistics indicates what anyone might suspect: that high income families will use transit very much when it is available to them.

A glance at the high income family finds transit users. One third of the members of the family are too old or too young to drive automobiles (over 65 or under 16), yet have time and money urging them onto the street. Wilbur Smith & Associates found higher income families make twice as many trips as low income families. These nondriving high income persons would prefer a transit ride to imposing on a driver member of the household for chauffer service.

2. The possibilities are great of increasing taxi service to move passengers to and from Multicenter terminals—or to use taxis as the

public service transit vehicles between centers in off hours, between smaller centers and for shorter trips. The rate of unemployment among young men who could drive taxis or small buses is about three times the unemployment rate of older men. The number of automobiles that would be converted to taxi use is enormous. There are five hundred automobiles for every bus in the metropolitan area.

3. A Multicenter transit system is not expensive. A compartive cost analysis of the two systems is beyond the scope of this inquiry. The Multicenter Plan is off to a flying start when such a comparison is made because it saves 175 million dollars that would be spent by the Gilman Plan for a separate system of structures built for buses only. These structures are not needed for the Multicenter Plan.

For shorter trips the Gilman Plan would charge about 6c per mile. Imagine the most expensive aspect of the Multicenter Plan, its outside edge, where six-passenger station wagons and microbuses shuttle passengers between remote transportation centers. If the driver of a vehicle is paid $2 per hour, the vehicle moves 30 miles each hour at the cost of 12c each mile, and carries four passengers, each passenger could be charged 5c per mile and the trip would be a success. School bus transportation resembles the Multicenter idea in that it is a custom cut, luxury service (everyone gets a seat and is picked up at his door and taken to his destination), it does not travel far, and it uses smaller vehicles. This is done at the cost of about 6c per mile per passenger.

4. In the mind of the potential transit user the Multicenter system makes a strong, simple image. Every place in the metropolitan area could be identified by what terminal it is near: Clayton, Westroads, Alton, Grand and Gravois, etc. It is transportation based on places rather than lines.

For all of these reasons the Multicenter system might attract as much as 25% of all trips made. The Gilman transit system is designed pessimistically to carry only 10% of all future trips.

Although the Multicenter Plan might not produce the *bigger* downtown, it might produce a *better* downtown than one containing a constantly enlarging work force, one that frantically tries to cling to the most important activities of an ever-enlarging metropolitan area. The Clayton office center, ten miles west of downtown, with 10,000 employees (one tenth of downtown's) is living proof that a subcenter can carry on important metropolitan functions. In fact, the Gilman engineers made their pro-downtown St. Louis study from a Clayton office headquarters. It is not sad that downtown is declining. It is sad that fixation with its decline distracts the area's leaders from another problem: that not enough Claytons are being formed, that suburban centers are diffused, too small. Three major department

stores should be in the same location in the suburbs, not each a mile from the next. Besides the social interaction of a small but important and historically elegant downtown, the Multicenter Plan offers life and activity in each of the centers. These will not be sleepy, parochial villages. Each will be a door to the rest of the city, to the rest of the world. This plan offers the experience of transit for everyone. Here one can find a new face, a new voice. Here are Mumford's words:

> The old separation of man and nature, of townsman and countryman, of Greek and barbarian, of citizen and foreigner, can no longer be maintained: for communication, the entire planet is becoming a village; and as a result, the smallest neighborhood or precinct must be planned as a working model of the larger world.[15]

15. MUMFORD, THE CITY IN HISTORY 573 (1961).

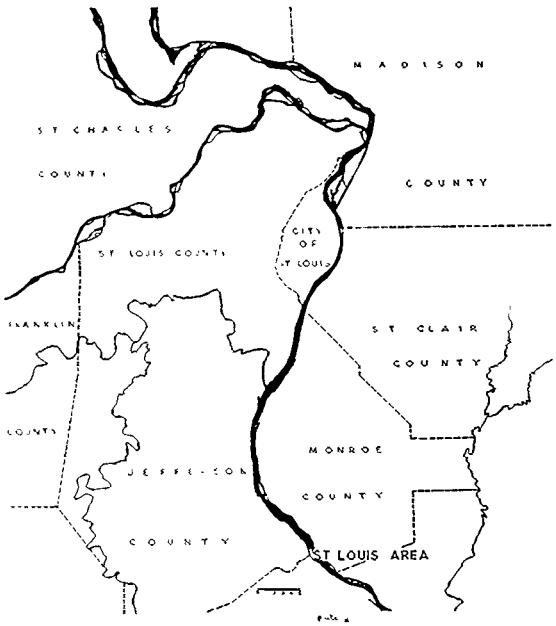


Plate 1

Saint Louis and Surrounding Territory

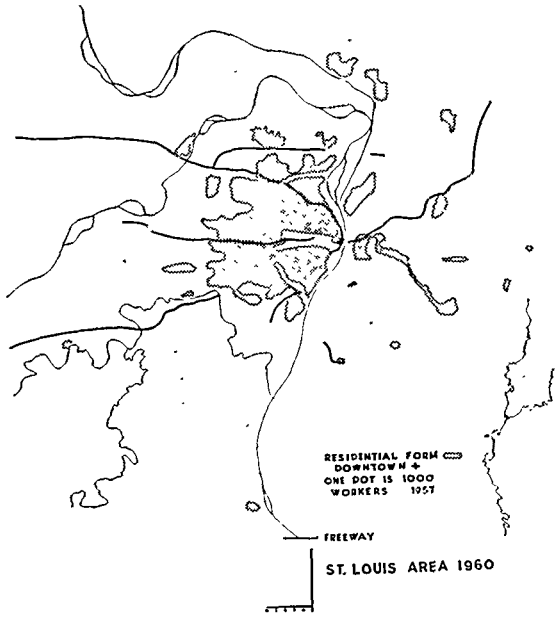
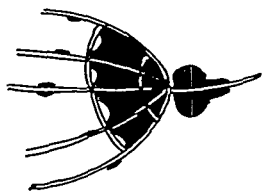
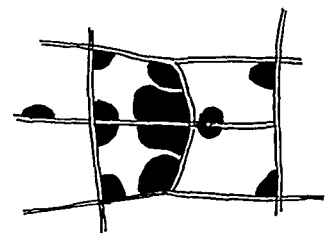


Plate 2

Freeways 1960





PLANS IN HISTORIC PERSPECTIVE

Plate 3

Plans in Historic Perspective

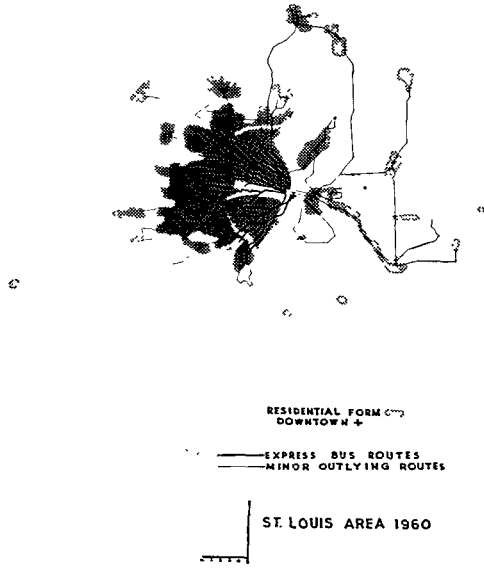


Plate 4

Present Transit Routes

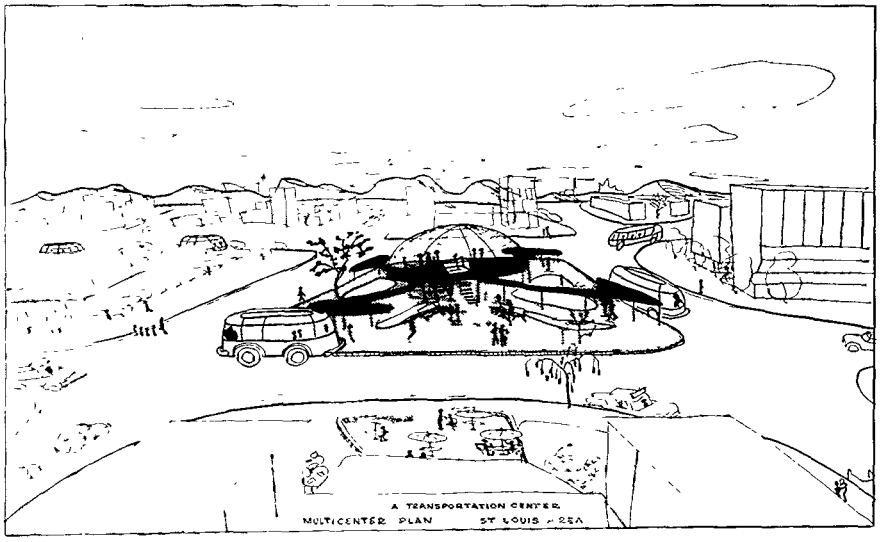


Plate 5

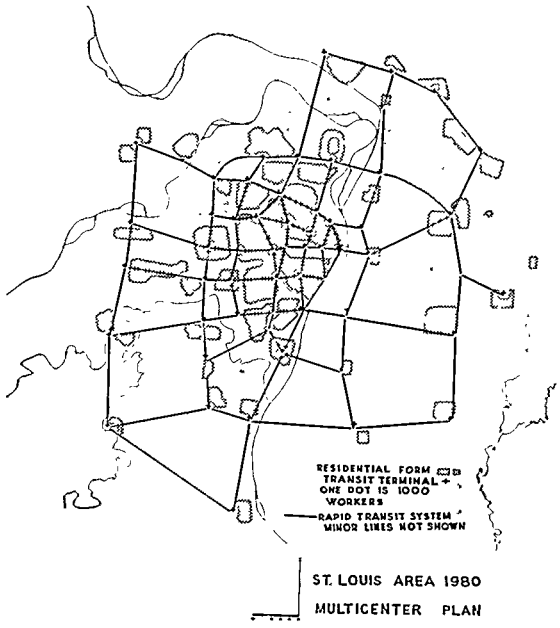


Plate 6

Transit Routes 1980

Multicenter Plan

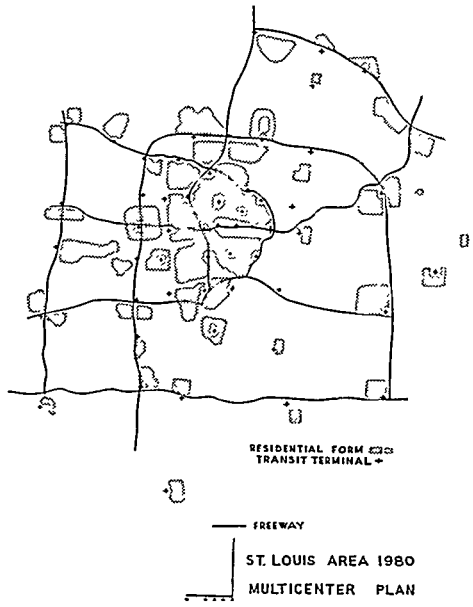


Plate 7

Freeways 1980

Multicenter Plan

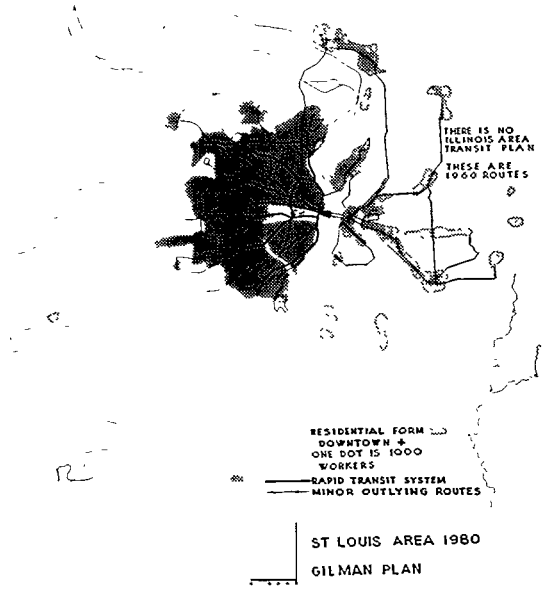


Plate 8

Transit Routes 1980

Gilman Plan

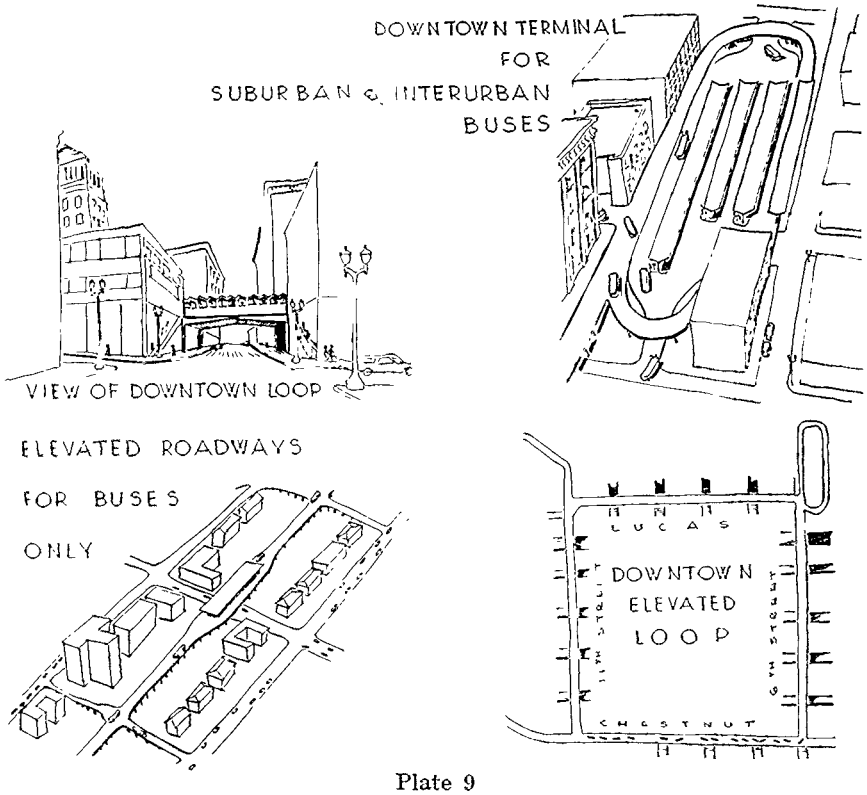


Plate 9

Improvements Required by the Gilman Plan

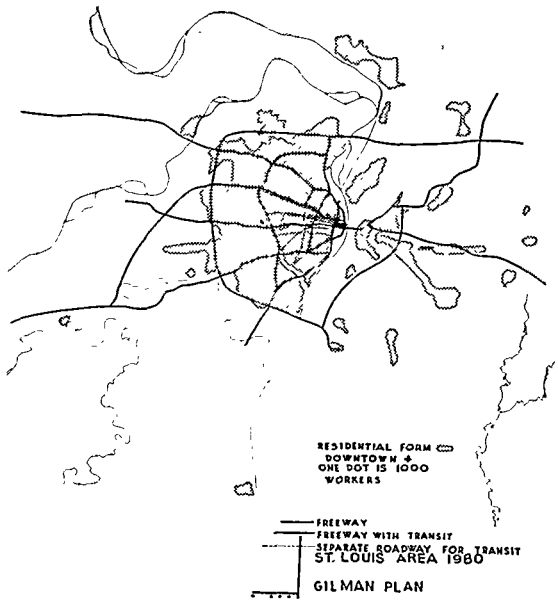


Plate 10

Freeways 1980

Gilman Plan

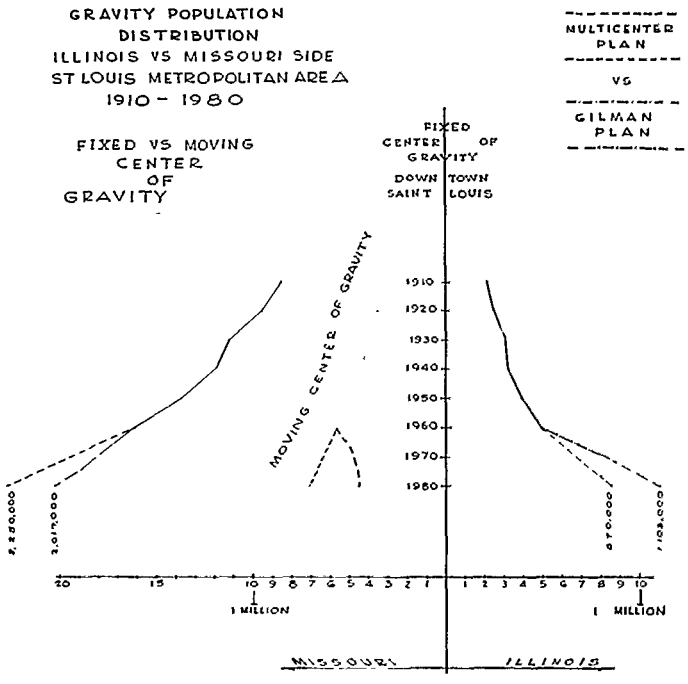


Plate 11

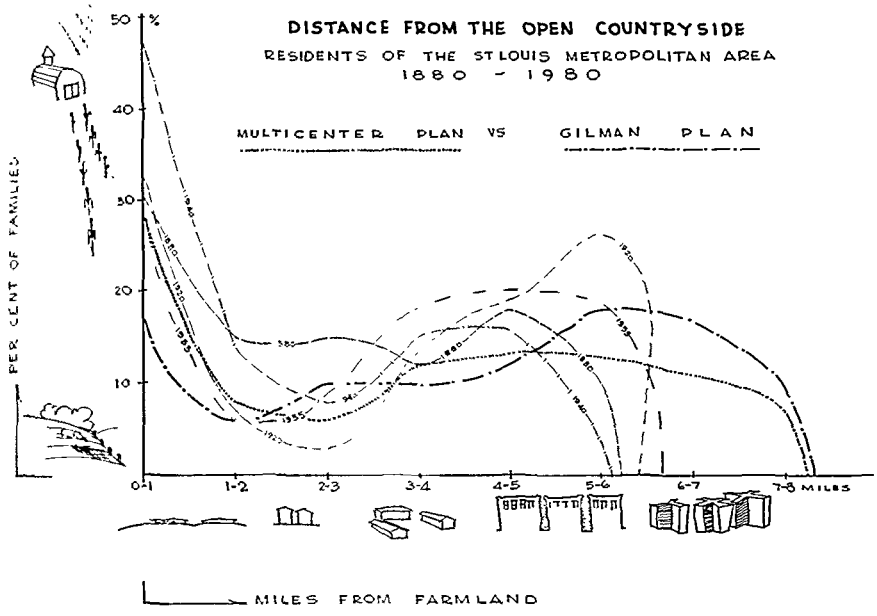


Plate 13

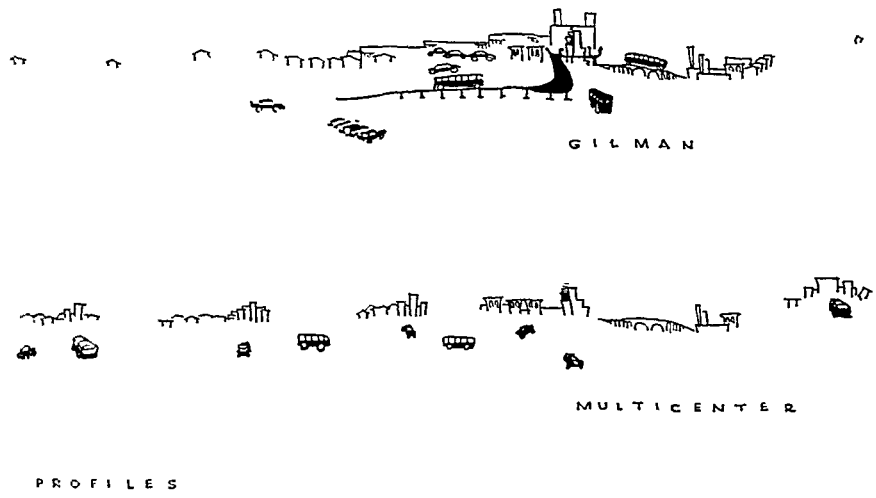


Plate 14

Profiles Gilman vs. Multicenter Plan